SUPPLY CHAIN MANAGEMENT OF FRUIT AND VEGETABLE INDUSTRY IN SRI LANKA

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Abstract

Fruits and vegetables are damaged due to inappropriate methods of picking, packing, Storage and transportation. They perish during this process. Insufficient information Flow is another major handicap. Therefore it is very important to study the whole Supply chain and find out the necessary remedies in order to develop Sri Lankan fruit and vegetable industry.

The main objective of this research is to study the whole supply chain of fruit & Vegetable industry, to identify the weak links of the supply chain and to identify the Improvements in order to maximize profit for the growers and minimize cost to the consumer.

This research is also aimed to identify the extent of fruit and vegetables damaged by The methods of wrong handling, storage and packaging. And also to identify the gaps and necessary improvements for fruit & vegetables supply chain using the Supply Chain Operation Reference model (SCOR).

The major component of this research is mapping the total supply chain thread for Fruit and vegetable industry in Sri Lanka in order to fulfill all the objectives. This Research targets few selected fruits and vegetables and map the supply chain threads.

Mapping the supply chain threads for banana, lime, papaya, jack fruit and tomato Were mammoth tasks. Each fruit and vegetable has different supply chain thread Depending on the geographical and climate conditions, these threads change.

Total damage and perishing of fruits and vegetables in the supply chain depend on the supply chain thread and also it varies according to the method of handling, packing and transport. By selecting papaya supply chain thread: farmer - truck buyer - retailer- consumer, the percentage damage was analyzed, by wrapping in papers

and packing in boxes gave different percentage damages. If plastic crates are introduced thus minimizing or eliminating damages in total supply chain, it can recover the initial investment within one and half months. If the initial investment was done by the truck buyer they have to wait for four and half months to recover the initial investment and this is on the assumption that the truck buyer can charge additional50 cents per kilogram if they use plastic crates as method of packing. Due to reluctance of the chain partners to invest, there should be some financial incentives to initiate this packing method and it will result in significant benefits to the total supply chain.

After mapping the supply chain for papaya, banana, lime, jack fruit and tomato as at present, and by studying the supply chain in best performing sector and super markets, the main component missing is Plan Supply Chain (PI). Plan Source (P2), Plan Make (P3),Plan Deliver (P4) are there to some extent in the chain partners but Planning Supply Chain as a whole (PI) is absent.

Decoupling Point (DP) in Sri Lankan super market sector is at the distribution center and for other chains DP is at the retailers that are close to the consumer. Chain members were found to take considerable time to move their inventory. This is the cause for a large percentage perishing, since this fruit and vegetable life time is short and if this time period is not managed properly it will cause problems. Integrated collection and transportation system to plan and manage by central unit is the answer, and then it could be arranged for daily collection and distribution network.

In banana and papaya supply chain, wholesalers' role is relatively small and because of their handling time of extra two days, it causes an increase in the percentage of perishing and damage, adding further cost to consumer. If in the supply chain, truck buyers directly deal with the retailer, this damage percentage can be reduced and can also reduce transportation cost. Since individual retailers at present make arrangements of transportation which is costly, it is preferred for the truck buyer to develop integrated distribution network. This will reduce the transportation costs to a great extent.

In all supply chains, the maximum profit margin is kept by the retailers. Then comes the wholesalers own high profit margins. Farmers take higher profit once they sell their products to the consumer at the fair, but quantity involved in this chain is comparatively low.

Transportation and overheads cost component of the supermarket supply chain is comparatively high and the cost due to damage is low compared to the other supply chains. However since supermarket supply chain manages quality of the fruit and vegetable, consumers who enjoy high living standard are willing to buy from them and pay an additional amount.

When analyzing the price breakdown for supply chain threads for fruits and vegetables in this research, the maximum portion was found to be the profit component, second came costs due to damage/ perishing and thirdly basic production cost. Around one fifth portion is only the amount for the cost of production for these fruit and vegetable items and the balance part of what the consumer pays consists of the profit, cost due to damage, transportation cost, packaging cost, loading unloading cost and overheads.